

**Amendments to the Claims:**

1. (currently amended): A device for the detection of ligands comprising:  
at least one substrate;  
at least one receptor attached to said substrate, wherein said at least one receptor is capable of binding to a ligand to form a receptor-ligand complex; [and wherein the formation of said receptor-ligand complex produces a signal; and] wherein the at least one substrate is positioned within an amount of a liquid crystalline material having at least one ligand therein, wherein upon formation of said receptor-ligand complex, optical characteristics of said liquid crystalline material are altered to allow detection of said ligands  
[an amplification mechanism interfaced with said receptor comprising a liquid crystalline material, wherein said amplification mechanism amplifies said signal upon receptor-ligand complex formation].
2. (original): The device of claim 1, wherein said at least one receptor is attached to the surface of said substrate.
3. (currently amended): The device of claim [2]1, wherein the substrate is a porous substrate and said at least one receptor is attached to ~~at least one of~~ (i) the surface of said substrate ]and-[ (ii) ]the at least one pores of a porous substrate.
4. (currently amended): The device of claim 3, wherein a plurality of receptors are attached to and randomly distributed on the surface and within the pores of said porous [substantially spherical] substrate.
5. (original): The device of claim 1, wherein the liquid crystalline material is selected from the group consisting of thermotropic liquid crystalline material and lyotropic liquid crystalline material.

6. (original): The device of claim 5, wherein the liquid crystalline material is a lyotropic liquid crystalline material.
7. (original): The device of claim 6, wherein the lyotropic liquid crystalline material is a lyotropic chromonic liquid crystalline material.
8. (original): The device of claim 5, wherein the liquid crystalline material is a thermotropic liquid crystalline material.
9. (original): The device of claim 1, wherein the substrate is made from a material selected from the group consisting of polymeric and inorganic materials.
10. (original): The device of claim 9, wherein the polymeric materials are selected from the group consisting of polyions, polyalkenes, polyacrylates, polymethacrylates, polyvinyls, polystyrenes, polycarbonates, polyesters, polyurethanes, polyamides, polyimides, polysulfones, polysiloxanes, polysilanes, polyethers, and polycarboxylates.
11. (currently amended): The device of claim [10]9, wherein the polymeric material is a polystyrene.
12. (currently amended): The device of claim [9]1, wherein the substrate is a substantially spherical substrate [is made from an inorganic material].
13. (currently amended): The device of claim [12]9, where the substrate is made from an inorganic material [is] selected from the group consisting of glass, silicon, and colloidal gold.
14. (original): The device of claim 13, wherein the inorganic material is glass.

15. (original): The device of claim 1, wherein said at least one receptor is attached to said substrate by at least one means selected from the group consisting of (i) chemical attachment and (ii) physical attachment.
16. (original): The device of claim 15, wherein said chemical attachment is covalent bonding.
17. (currently amended): The ~~method~~ device of claim 15, wherein said physical attachment is selected from the group consisting of: hydrophobic interactions and van der Waals interactions.
18. (currently amended): A method for detecting ligands comprising:  
providing a device for detecting ligands, said device comprising at least one [substantially spherical] substrate; at least one receptor attached to said [spherical] substrate, wherein said at least one receptor is capable of binding to a ligand to form a receptor-ligand complex, and wherein said substrate is positioned within a liquid crystalline material [and wherein the formation of said receptor-ligand complex produces a signal; and an amplification mechanism interfaced with said receptor comprising a liquid crystalline material, wherein said amplification mechanism amplifies said signal upon receptor-ligand complex formation];  
contacting a sample with the device, the sample including at least one ligand adapted to bind to the receptor to form the receptor-ligand complex, and  
~~exposing a sample containing at least one ligand to said at least one substrate;~~  
~~allowing said receptor to interact with said at least one ligand to form at least one receptor-ligand complex, thereby producing a signal;~~  
[amplifying the signal with the amplification mechanism;]  
detecting the presence of a ligand by means of a change in the optical characteristics of the liquid crystalline material ~~and measuring the amplified signal generated produced~~ by said receptor-ligand complex formation.

19. (currently amended): A device for the detection of ligands comprising:  
at least one substantially spherical substrate; [coated with a receptor-binding material;]  
at least one receptor attached to said [coated] substantially spherical substrate, wherein said at least one receptor is capable of binding to a ligand to form a receptor-ligand complex [and wherein the formation of said receptor-ligand complex produces a signal]; and  
an amplification mechanism ~~interfaced with~~ [said receptor] comprising a liquid crystalline material, wherein the optical characteristics of the liquid crystalline material vary to detect the presence of said ligands [wherein said amplification mechanism amplifies said signal] upon receptor-ligand complex formation within the liquid crystalline material.
20. (new) A device for detection of a ligand comprising  
an amount of liquid crystalline material, the liquid crystalline material having initial optical transmission characteristics,  
at least one substrate positioned in the amount of liquid crystalline material so as to be moveable therein  
at least one ligand receptor associated with the at least one substrate, the ligand receptor capable of attaching to a ligand,  
wherein upon attachment of a ligand to the receptor, the initial optical characteristics of the liquid crystalline material are altered  
a detector for detecting a change in the initial optical characteristics of the liquid crystalline material to determine the presence of a ligand.
21. (new) A method for detecting a ligand comprising the steps of  
providing an amount of liquid crystalline material having initial optical characteristics,

positioning at least one substrate having at least one ligand receptor associated therewith, the liquid crystalline material so as to be moveable throughout the liquid crystalline material,

detecting a change from the initial optical characteristics in the liquid crystalline material indicating attachment of at least one ligand to the receptor and the presence of the ligand thereby.